



1656  
#3

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
(Case No. 00-653-A)

In the Application of:

Chad A. Mirkin, et al.

Serial No.: 09/927,777

Issued: August 10, 2001

For: NANOPARTICLES HAVING  
OLIGONUCLEOTIDES ATTACHED  
THERE TO AND USES THEREFOR

Examiner: J. Riley

Group Art Unit: 1656

RECEIVED

OCT 22 2001

TECH CENTER 1600/2900

TRANSMITTAL LETTER

Asst. Commissioner for Patents  
Washington, D.C. 20231

Sir:

In regard to the above identified application.

1. We are transmitting herewith the attached:

- a) Supplemental Information Disclosure Statement;
- b) U.S. PTO 1449 Form with copies of 12 references; and
- c) Return Postcard.

2. With respect to fees:

- a) No fee is due.

3. GENERAL AUTHORIZATION: Please charge any additional fees or credit overpayment to Deposit Account No. 13-2490. A duplicate copy of this sheet is enclosed.

4. CERTIFICATE OF MAILING UNDER 37 CFR § 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described in paragraph 1 hereinabove, are being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Asst. Commissioner for Patents, Washington, D.C. 20231 on this 16 day of October, 2001.

Date:

10/16/01

Respectfully submitted,

Emily Miao

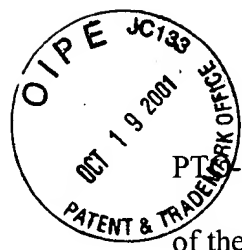
Registration No. 35,285

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
(Case No. 00-653-A)



3. Weiss, et al., U.S. Patent No. 5,990,479 issued 11/23/99.
4. PCT Patent No. WO 92/04469, published 03/19/92.
5. Stimpson, et al., "Real-time detection of DNA hybridization and melting on oligonucleotide arrays by using optical wave guides," *Proc. Natl. Acad. Sci.*, Vol. 92, pp. 6379-6383, California Institute of Technology (1995) U.S.
6. Storhoff, et al., "Strategies for Organizing Nanoparticles into Aggregate Structures and Functional Materials," *Journal of Cluster Science*, Vol. 8, No. 2, pp. 179-217, Plenum Publishing Corporation (1997) U.S.
7. Storhoff, et al., "One-Pot Colorimetric Differentiation of Polynucleotides with Single Base Imperfections Using Gold Nanoparticle Probes," *J. Am. Chem. Soc.*, Vol. 120, pp. 1961-1964, American Chemical Society (1998) U.S.
8. Tomlinson, et al., "Detection of Biotinylated Nucleic Acid Hybrids by Antibody-Coated Gold Colloid," *Analytical Biochemistry*, Vol. 171, pp. 217-222, Academic Press, Inc. (1988) U.S.
9. Velev, et al., "In Situ Assembly of Colloidal Particles into Miniaturized Biosensors," *Langmuir*, Vol. 15, No. 11, pp. 3693-3698, American Chemical Society (1999) U.S.
10. Zhu, et al., "The First Raman Spectrum of an Organic Monolayer on a High-Temperature Superconductor: Direct Spectroscopic Evidence for a Chemical Interaction between an Amine and  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ ," *J. Am. Chem. Soc.*, Vol. 119, pp. 235-236, American Chemical Society (1997) U.S.
11. Yguerabide, et al., "Light-Scattering Submicroscopic Particles as Highly Fluorescent Analogs and Their Use as Tracer Labels in Clinical and Biological Applications," I. Theory, *Analytical Biochemistry*, Vol. 262, pp. 137-156 (1998) U.S.
12. Yguerabide, et al., "Light-Scattering Submicroscopic Particles as Highly Fluorescent Analogs and Their Use as Tracer Labels in Clinical and Biological Applications," II. Experimental Characterization, *Analytical Biochemistry*, Vol. 262, pp. 157-176 (1998) U.S.

In accordance with MPEP Sections 609 and 707.05(b), it is requested that each document cited (including any cited in applicant's specification which is not repeated on the attached Form



PTO-1449) be given thorough consideration and that it be cited of record in the prosecution history of the present application by initialing on Form PTO-1449. Such initialing is requested even if the Examiner does not consider a cited document to be sufficiently pertinent to use in a rejection, or otherwise does not consider it to be prior art for any reason, or even if the Examiner does not believe that the guidelines for citation have been fully complied with. This is requested so that each document becomes listed on the face of the patent issuing on the present application.

The present Disclosure Statement is being submitted in compliance with 37 CFR 1.56 insofar as an Examiner might consider any of the cited documents important in deciding whether to allow the application to issue as a patent, but the citation of each document is not to be construed as an admission that such document is necessarily relevant or prior art. No representation is intended that the cited documents represent the results of a complete search, and it is anticipated that the Examiner, in the normal course of examination, will make an independent search and will determine the best prior art consistent with 37 CFR 1.104(a) and 1.106(b) and, in the course of each search, will review for relevance every document cited on the attached form even if not initialed.

Early and favorable consideration is earnestly solicited.

Respectfully submitted,

Dated: 10/16/01

Emily Miao  
Registration No. 35,285

McDonnell Boehnen Hulbert & Berghoff  
300 South Wacker Drive  
Chicago, Illinois 60606  
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Facsimile: (312) 913-0002

FORM PTO-1449  
(Rev. 2-32)

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

00-653-A

Serial No.

09/927,777



INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

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Applicant:

Chad A. Mirkin, et al.

TECH CENTER 1600/2900

Filing Date:

8/10/01

Group:

1656

U.S. PATENT DOCUMENTS

| Examiner<br>Initial |    | Document Number | Date     | Name              | Class | Subclass | Filing<br>Date if<br>Appropriate |
|---------------------|----|-----------------|----------|-------------------|-------|----------|----------------------------------|
|                     | 1. | 5,599,668       | 02/04/97 | Stimpson, et al.  |       |          |                                  |
|                     | 2. | 5,751,018       | 05/12/98 | Alvisatos, et al. |       |          |                                  |
|                     | 3. | 5,990,479       | 11/23/99 | Weiss, et al.     |       |          |                                  |
|                     |    |                 |          |                   |       |          |                                  |

FOREIGN PATENT DOCUMENTS

|  |    | Document Number | Date    | Country | Class | Subclass | Translation<br>Yes No |  |
|--|----|-----------------|---------|---------|-------|----------|-----------------------|--|
|  | 4. | WO 92/04469     | 3/19/92 | PCT     |       |          |                       |  |

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).

|  |    |   |
|--|----|---|
|  | 5. | Stimpson, et al., "Real-time detection of DNA hybridization and melting on oligonucleotide arrays by using optical wave guides," <i>Proc. Natl. Acad. Sci.</i> , Vol. 92, pp. 6379-6383, California Institute of Technology (1995) U.S. |
|  | 6. | Storhoff, et al., "Strategies for Organizing Nanoparticles into Aggregate Structures and Functional Materials," <i>Journal of Cluster Science</i> , Vol. 8, No. 2, pp. 179-217, Plenum Publishing Corporation (1997) U.S.               |
|  | 7. | Storhoff, et al., "One-Pot Colorimetric Differentiation of Polynucleotides with Single Base Imperfections Using Gold Nanoparticle Probes," <i>J. Am. Chem. Soc.</i> , Vol. 120, pp. 1961-1964, American Chemical Society (1998) U.S.    |
|  | 8. | Tomlinson, et al., "Detection of Biotinylated Nucleic Acid Hybrids by Antibody-Coated Gold Colloid," <i>Analytical Biochemistry</i> , Vol. 171, pp. 217-222, Academic Press, Inc. (1988) U.S.   |
|  | 9. | Velev, et al., "In Situ Assembly of Colloidal Particles into Miniaturized Biosensors," <i>Langmuir</i> , Vol. 15, No. 11, pp. 3693-3698, American Chemical Society (1999) U.S.  |

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(Rev. 2-32)

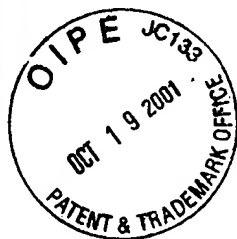
U.S. Department of Commerce  
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Applicant:

OCT 22 2001

Chad A. Mirkin, et al. TECH CENTER 1600/2903

Filing Date:

8/10/01

Group:

1656

**U.S. PATENT DOCUMENTS**

| Examiner<br>Initial | Document Number | Date | Name | Class | Subclass | Filing<br>Date if<br>Appropriate |
|---------------------|-----------------|------|------|-------|----------|----------------------------------|
|                     |                 |      |      |       |          |                                  |
|                     |                 |      |      |       |          |                                  |
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|-----------------|------|---------|-------|----------|-----------------------|
|                 |      |         |       |          |                       |
|                 |      |         |       |          |                       |

**OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).**

|     |  |
|-----|--|
| 10. | Zhu, et al., "The First Raman Spectrum of an Organic Monolayer on a High-Temperature Superconductor: Direct Spectroscopic Evidence for a Chemical Interaction between an Amine and Yb <sub>2</sub> Cu <sub>3</sub> O <sub>7-δ</sub> ," <i>J. Am. Chem. Soc.</i> , Vol. 119, pp. 235-236, American Chemical Society (1997) U.S. |
| 11. | Yguerabide, et al., "Light-Scattering Submicroscopic Particles as Highly Fluorescent Analogs and Their Use as Tracer Labels in Clinical and Biological Applications," I. Theory, <i>Analytical Biochemistry</i> , Vol. 262, pp. 137-156 (1998) U.S.  |
| 12. | Yguerabide, et al., "Light-Scattering Submicroscopic Particles as Highly Fluorescent Analogs and Their Use as Tracer Labels in Clinical and Biological Applications," II. Experimental Characterization, <i>Analytical Biochemistry</i> , Vol. 262, pp. 157-176 (1998) U.S.  |
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